of diabetes. These effects may be mediated by the direct effects of insulin on the myocardium and coronary vasculature or indirectly through systemic reductions in blood glucose. Anti-angiogenic proteins, angiostatin and endostatin, are downregulated with insulin treatment and appear to play an important role in the diabetic angiogenic response. Insulin therapy appears to be a promising strategy to improve the results of growth factor or cell-based angiogenic therapies in diabetic patients.

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Discussion

Dr Mark J. Krasna *(Towson, Md).* I was quite impressed with the technical feat of this study. Can you elaborate on the three procedures that you performed on each of these animals and was there any mortality among the three groups?

Dr Boodhwani. In the past we have done more than 400 ameroid constrictor experiments in our laboratory. We found that in a potent model of diet induced hypercholesteremia, there was about a 10% to 20% mortality rate with the animals, but over time the techniques have been improved and we have a much better sense of what the model entails now. Fortunately, in this study, we did not lose any animals.

Dr Krasna. Along the same lines, when you are doing three procedures on each animal, was there a significant infection rate from the first to the third, or was that also low?

Dr. Boodhwani. In the normal, nondiabetic animals (group ND) there was virtually no infection. In the diabetic animals we found that there was some impairment of wound healing and breakdown of the incision. However, to emphasize, all animals were treated with postoperative antibiotics for 5 days.

Dr Paul W. M. Fedak *(Calgary, Alberta, Canada).* This is a great study. I think this model is going to be very important for future studies in the area. My question to you is, I did not see anything about regional or global left ventricular function. Was that addressed in this study or will it be addressed in any future studies? If not, what would you hypothesize would be the effects of insulin treatment?

Dr Boodhwani. In the past we have demonstrated that circumflex ameroid constrictor placement leads to a reduction in perfusion as well as regional wall motion abnormalities. Regional wall motion abnormalities were not specifically studied in this model, although we did assess global left ventricular function. We expect, though, that improvement in perfusion would likely result in improvement in regional wall motion as well.